Electric Service Quality Rulemaking Data Request

Indianapolis Power & Light Company

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Reliability:

The area of reliability will include the examination of sustained outages, momentary outages, restoration of service following a sustained outage and power quality.

1. **Is your utility participating in any EPRI (or other organizations) research projects relating to reliability or other service quality issues? If yes, please describe the project(s) you are involved in and how it relates to reliability issues addressed in this section of the data request.**

IPL is not currently participating in any research projects relating to reliability or other service quality issues. Over the past several years, however, IPL has participated in various research projects with EPRI, Rose-Hulman Institute of Technology and Purdue University regarding power quality and reliability issues. Some of the main projects are described below.

As a past member of EPRI Power Quality Targets, IPL participated and funded various efforts to address power quality and reliability issues. Software programs, education information, training and industry initiatives are the main deliverables of the EPRI Power Quality Targets. These programs are used to identify customer incompatibilities and recommend solutions. The EPRI Power Quality Database contains technical, measurement and case study information on typical problems and solutions. EPRI training has provided a foundation for IPL staff to assist customers.

Research initiatives by EPRI and member utilities have caused manufacturers to consider additional design tolerances in their equipment to help mitigate the effect of power interruptions and voltage sags. The EPRI Distribution System Power Quality Monitoring Project initiated in the 1990's consisted of measuring, recording and tabulating power quality data from across the country to specifically define the performance of typical utility power distribution systems. The new 2000 Information Technology Industry Council (ITIC) curve is a direct result of this effort. This curve defines the voltage tolerance of typical digital equipment to momentary interruptions, voltage sags and swells, and under and over voltage conditions. The new ITIC curve supersedes the Computer Business and Electronic Manufacturers Association, CBEMA, curve.

IPL engineers along with Professor N. Rostomkolai and students of Rose-Hulman Institute of Technology worked together to develop an Electromagnetic Transients Program model of the bulk transmission system. The model was used as the design basis for the installation of the first 100 MVAR capacitor bank on the IPL 138 kV transmission system. Electrical transients associated with capacitor switching events were analyzed and studied during this project. Capacitor switching

transients can cause failures and nuisance tripping of customer and utility equipment. The results of the study were used to design the 138 kV circuit breaker with synchronous closing capability.

While at Purdue University, Professor G. T. Heydt conducted a harmonics study on the IPL system. IPL engineers and Power Quality specialists developed the scope and participated in the measurements for the study. Part I of the study consisted of a survey of harmonics on the IPL system. Measurements were made at various locations and compared to proposed harmonic limits and other indices. Part II of the study consisted of a review of the cost of harmonics, harmonic losses, and specification of harmonic limits for DSM equipment, rates, billing and metering issues. This study formed the basis for IPL's power quality programs.

Service Interruption and Outages

Sustained Outages:

1. **How does your utility identify an outage? At what point does your utility consider an outage a "sustained" outage versus a "momentary" outage?**

IPL identifies a sustained interruption as a decrease in supply voltage to zero by the operation of an interrupting device for a time period of 2 minutes or greater. A sustained interruption often requires an IPL site visit to make repairs. A momentary interruption occurs when the single operation of an interrupting device results in a supply voltage decrease to less than 10% of nominal for a time period of 1 minute or less. A momentary interruption event is a series of one or more operations of an interrupting device that are completed in a specified time not to exceed 2 minutes. For example, if a distribution circuit breaker operates one, two or three times for the same problem and then holds, these momentary interruptions are considered to be one event. Conversely, since a momentary interruption event and a momentary interruption are equivalent on the transmission system due to the re-closing philosophy (see response to Momentary Outages, question 1 for IPL's re-closing philosophy), a time period of 2 minutes or less is used to define this case. These definitions are based upon IEEE Std 1159 – 1995 entitled, "IEEE Recommended Practice for Monitoring Electric Power Quality" and IEEE Std 1366 – 2000 entitled, "Trial Use Guide for Electric Power Distribution Reliability Indices".

2. **Please describe the response process once an outage is identified. Has your response process changed in any way over the past 5 years? Please explain those changes. What follow-up is done after service has been restored to determine that an individual customer, once again, has electric service?**

Once an interruption is identified, the Outage Management System will help the dispatcher identify the most likely point(s) of failure so that field crews can be dispatched to make the necessary repairs.

On December 3, 2002 IPL transitioned from our old Service Restoration System (a mainframe paper ticket system) to an automated Outage Management System (OMS) which allows much better

integration with other IPL computer systems and more timely and accurate information. Anticipated benefits of the new OMS include:

- Improving customer and public satisfaction through better communication with the enhanced capability to estimate restoration times, both during storm and non-storm interruption events.
- Reducing the Customer Average Interruption Duration Index (CAIDI) by improving the throughput and analysis of trouble reports, increasing the operational efficiency in the dispatch center and decreasing the response time of field crews to restore interruptions.
- Automating operation logs and the collection and generation of operational performance metrics.
- Automating the process of generating reliability indices reports.
- Interfacing the OMS with existing software systems to improve the information flow between different systems.

In the past few years, IPL has added approximately 60 automated distribution switches to the mainline primary backbone distribution system. Another 14 automated distribution switches are planned in 2003. These switches improve restoration time for some mainline interruptions.

At times, IPL uses the automated meter reading network to confirm that service has been restored to certain customers. The possibility of customer call backs following an outage is currently being evaluated.

3. Under what conditions or circumstances does your utility report an outage to the Commission? Since January 2001, how often have you reported an outage to the Commission? How often did you provide updates on the outage and the restoration of service?

IPL complies with 170 IAC 4-1-23, which requires that whenever service is interrupted in a major division, IPL will notify the Commission by telephone at the earliest practicable moment, advising the Commission of the time, duration, extent and cause of the interruption, if known. Historically, we followed up the telephone call with a written report within five days. Pursuant to the Commission's February 6, 2002 Order in Cause No. 41962, IPL has been reporting Level I and II storm events to the Commission quarterly. IPL provides a detailed report to the Commission on all Level III storms within 30 days of the event. As a practical matter, IPL typically informs the Commission of any significant storm event or significant customer outage at the earliest practicable moment and provides periodic updates until service restoration is complete.

Since January 2001, IPL has reported two Level III storm events to the Commission. This included the July 8, 2001 Level III thunderstorms and the September 20, 2002 Level III thunderstorm/tornado. Following the July 8, 2001 storms, IPL provided restoration updates on a daily basis. Following the September 20, 2002 storm, IPL provided restoration updates to the Commission on an hourly basis. Over the last 24 months, several other storm events, which have not resulted in service interruptions to a major division, have been reported to the Commission as a matter of courtesy but a formal record of those events and the frequency of the restoration updates have not been maintained.

4. **Outages resulting from major weather events can somewhat be anticipated, please describe the weather event outage response from the time a weather situation is known or anticipated to exist through the time the last customer is brought back online. Please describe any facilities and/or procedures that are specifically used in anticipation or during a major weather event in case of widespread outages. Are the facilities and/or procedures different depending on the type of weather event, for example tornado conditions versus a potential ice storm? Are there non-weather related outage situations when these facilities and/or procedures are used?**

IPL uses several systems and information sources to help detect, evaluate and respond to major weather events. Typical systems and information sources used by IPL for this purpose include:

- Weather Radar
- Lightning Detection Equipment
- IPL Anemometers
- National Weather Service Reports
- Indiana State Police Reports
- Other Utility Reports
- Relay Operation Reports
- Circuit Lockout Reports

Our objective is to monitor weather conditions and identify threatening weather before it reaches the IPL service territory in order to prepare accordingly. Once severe conditions reach Indianapolis, our goal is to identify the location of storm-related damage and customer interruptions and restore service as soon as practical. Various sources of information are monitored during and after a storm event in order to plan, manage and evaluate the restoration efforts.

An immediate damage assessment is critical to restoration efforts for large storm outages. The best way to assess damage is to put experienced personnel in the field as soon as it is safe. Prompt post-storm evaluation allows IPL to develop realistic estimates of system damage, restoration time and resources required to restore service.

Currently, the most accurate means of evaluating storm damage is to document and analyze customer outage calls. Like the vast majority of utilities, IPL is largely dependent on these calls to evaluate individual instances of outages. Customer interruptions are now analyzed within our new Outage Management System (OMS) to identify the most likely source of the outage. Once the source of the problem is identified, the Dispatcher will also use the OMS to dispatch field crews and document when the outage is restored. IPL uses the same basic guidelines, procedures and systems to respond to all weather and non-weather events. These guidelines are documented in the IPL Emergency Service Restoration Plan.

5. **What other government (local, state, federal) agencies or organizations must your utility interact or communicate with during outage situations? Specifically, are there other agencies or organizations that your utility is required by law or regulation to report to or communicate with during outage situations?**

In addition to the IURC, IPL is required by law/regulation to report to or communicate with the following government organizations regarding certain outage situations:

The U.S. Department of Energy's Energy Information Administration requires that Form EIA-417 must be submitted to the DOE Headquarters Operation Center if one of the following applies:

a. Uncontrolled loss of 300 MW or more of firm system loads for more than 15 minutes from a single incident
b. Load shedding of 100 MW or more implemented under emergency operational policy
c. System-wide voltage reductions of 3 percent or more
d. Public appeal to reduce the use of electricity for purposes of maintaining the continuity of the electric power system
e. Actual or suspected physical attacks that could impact electric power system adequacy or reliability; or vandalism which target components of any security systems
f. Actual or suspected cyber or communications attacks that could impact electric power system adequacy or vulnerability
g. Fuel supply emergencies that could impact electric power system adequacy or reliability
h. Loss of electric service to more than 50,000 customers for 1 hour or more
i. Complete operational failure or shut-down of the transmission and/or distribution electrical system

6. Are there other agencies, organizations or companies that your utility typically interacts or communicates with during critical outage situations? Please describe the circumstances and types of interactions or communications that occur.

MISO – IPL provides real-time status information to the Midwest ISO Control Center. This allows the Midwest ISO operators to see what is happening on the IPL transmission system. The IPL Transmission Operations Office also talks directly by phone with the Midwest ISO Reliability Coordinator to keep them informed of the condition of the IPL system. Any transmission facilities that will be out of service are entered into the Midwest ISO Outage Scheduler system

Interconnected Utilities – The IPL Transmission Operations Office keeps in direct contact with the control centers of the interconnected utilities, sharing information of the status and condition of the transmission system and the severity of the weather that might be approaching the respective utility's system.

ECAR - Now that the Midwest ISO is the reliability authority for IPL, there is not a requirement to keep ECAR advised of outages on our system. We however do try to keep the ECAR staff informed as to what our status is and the extent of damage.

Marion County Emergency Management and Local Law and Fire Departments - Various public safety issues including search and rescue coordination, downed wires, traffic control, outage reports, etc.

Local Media - Location and number of outages, public safety messages (Stay Away From Downed Power Lines), restoration estimates, etc.

Mayor's Office - Periodic outage/restoration/public safety updates.

OUCC - Periodic outage/restoration/public safety updates.

7. **What is the policy concerning the use of service crews from other utilities? Has the availability of crews or the willingness of other utilities to make crews available become more limited in recent years? Are non-utility crews being used or considered more routinely than requesting crews from neighboring utilities?**

IPL will call for assistance from other utilities and contractors when service cannot be restored within 48 hours using our own crews. We have not seen a decrease in the willingness of other utilities to make crews available. However, the availability of crews and outside contractors has always been dependent on the amount of restoration required by other utilities on their own system. On Level III storms, IPL will typically request help from both contractors and other utilities at the same time.

8. **What type of information does your utility typically gather/report/analyze regarding sustained outages? How is this information used in the utility?**

Every sustained interruption is recorded on an outage log. The outage log information includes the date, time of the first call, circuit, phase, fuse, transformer, time assigned, time completed, number of customers affected, KVA affected and customer minutes of outage. This has been a paper system in the past, but this log is in transition to an on-line database as part of the new Outage Management System. As the transition to an on-line database occurs, information will be more readily available. We will be reviewing this data to help improve our planning, engineering, and system operations.

The outage information retained by IPL is examined to determine the cause of certain interruptions (i.e. tree related, animal related, equipment failure, etc.) and to help identify developing trends and/or system weaknesses. The goal of data analysis is to identify potential problems and develop maintenance programs and corrective actions that minimize future customer interruptions.

9. **Does the utility attempt to quantify the financial costs of outages to customers and local communities? If so, please explain how this is done.**

No. IPL does not attempt to quantify the financial cost of interruptions to customers and local communities. Electrical outages are inevitable and may be due to acts of God or negligence of others. Under the law and IPL's tariffs, IPL is not normally liable for such claims. Different customers would have different losses due to electrical outages.

At times, company representatives may be asked to help customers identify and evaluate electrical problems on their side of the meter. During this process, we may help customers prepare a cost/benefit analysis that compares the customers' estimated outage costs (i.e. lost production, raw

materials, unproductive labor, etc.) with solution costs so that customers can make cost-effective decisions.

Momentary Outages:

1. **Does your utility identify and track momentary outages? How is a momentary outage identified and/or defined?**

Yes, IPL identifies and tracks momentary interruptions. A momentary interruption occurs when the single operation of an interrupting device results in a supply voltage decrease to less than 10% of nominal for a time period of 1 minute or less. This definition is based upon IEEE Std 1159 – 1995 entitled, "IEEE Recommended Practice for Monitoring Electric Power Quality" and IEEE Std 1366 – 200 entitled, "Trial Use Guide for Electric Power Distribution Reliability Indices".

The duration of a momentary interruption depends upon the time adjustments of re-closing relays. Re-closing relays operate following a fault and subsequent interruption on the power system to automatically attempt to restore power. On the distribution system, IPL uses a re-closing philosophy of three attempts which may result in three momentary interruptions of a circuit. Following three unsuccessful attempts to restore power, the circuit is locked out until manual circuit restoration occurs by field personnel. On the transmission system, IPL uses a re-closing philosophy of one attempt which may result in one momentary interruption.

IPL is considering a change in its distribution system protection philosophy that involves replacing instantaneous tripping with time delayed tripping for distribution system faults. This change would reduce the number of momentary interruptions experienced by most customers but it would also increase the number of sustained/reportable interruptions experienced by some customers. This change may also cause an increase in SAIFI and SAIDI results and increase voltage sags for C&I customers fed from dedicated 13KV distribution circuits. The method used by IPL to track momentary interruptions is discussed in Part 2.

2. **What type of information does your utility typically gather/report/analyze regarding momentary outages? How is this information used in the utility?**

Momentary interruptions are tracked and recorded by breaker open and close operations from the Energy Management System (EMS) via Supervisory Control and Data Acquisition (SCADA). Each breaker operation is dated and time stamped based upon national time synchronization methods. On the distribution system, a report of momentary interruption events and breaker operations are generated from EMS logs. The report includes the substation name, circuit breaker number, date, time, event, state, lockout identification, correlation with storm events and correlation with other coincident interruptions from fuses and switches. Transmission System breaker operation data is obtained directly from EMS log reports. Distribution system momentary interruption events and data are used to identify circuit performance.

An event is a series of one or more operations of an interrupting device that is completed in a specified time not to exceed 2 minutes. For example, if a distribution circuit breaker operates one, two or three times for the same problem and then holds, these momentary interruptions are considered to be one event. Conversely, since a momentary interruption event and a momentary interruption are equivalent on the transmission system, a time period of 2 minutes or less is used to define this case. Distribution circuits with higher incidences of momentary interruption are analyzed to determine the root cause of problems. The results of the analysis may require maintenance work, installation of additional equipment, tree trimming, load balancing, switching, etc.

3. **Other than the duration of the outage, are there operational or characteristic differences in a sustained outage versus a momentary outage?**

A sustained interruption typically results in a customer call to our Call Center and requires an IPL site visit to repair the problem. Momentary interruption events, however, typically do not involve a customer inquiry or an IPL field response. Some customer telephone inquiries may occur even after power restoration from a momentary interruption. Circuits that experience frequent momentary interruptions may require an IPL site visit to address customer inquiries and/or to install temporary service monitoring equipment to analyze the cause.

Performance Measures and Statistics

1. **Typical reliability performance statistics include SAIDI, CAIDI, SAIFI, etc. Does your utility routinely calculate these statistics? How is each of the variables in each of the calculations defined? Are these statistics calculated as part of your outage management system or through some other means?**

Yes, IPL routinely calculates these statistics.

SAIDI = Total of customer interruption durations / Total number of customer served.
CAIDI = Total customer interruption durations / Total number of customer interruptions.
SAIFI = Total number of customer interruptions / Total number of customers served.

At this time, the statistics are being calculated by manual methods. A new OMS was just installed by IPL. The calculations are being validated prior to using the system generated statistics.

2. **Are there other reliability statistics your utility calculates? What are they? How are they calculated? How are the variables used to calculate them defined? Are these statistics calculated as part of your outage management system or through some other means?**

Yes. IPL calculates MAIFI and MAIFI(e) indexes. These are defined as Momentary Average Interruption Frequency Index and Momentary Average Interruption Frequency Index associated with a single event.

MAIFI = Total number of momentary customer interruptions / Total number of customers served.
MAIFI(e) = Total number of momentary customer events / Total number of customers served.

These indices are calculated manually based on information received from our EMS/SCADA system. Once the integration between our new OMS and EMS is completed and calculations are validated, the system generated results will be used.

3. **Does your outage management system calculate other reliability statistics that your utility does not routinely review? What are these statistics? How are they calculated? How are the variables used to calculate them defined?**

IPL does not routinely calculate or review any other reliability statistics.

4. **Reliability statistics are often calculated excluding storms or other major outage events. What are the advantages and disadvantages to excluding storms or other events? Do reliability statistics typically calculated by your utility include or exclude storms or major outage events? If these events are excluded, how do you determine when to exclude an outage event? How do you define the different levels of outage events?**

Weather can be a major influence in reliability index calculations. The advantage of excluding storms and/or other major outage events beyond a utility's control is that it allows measurement of performance under consistent conditions. The disadvantage of excluding storms and/or other large outage events is that the resulting statistics may not be an accurate reflection of the performance customers actually experience. Thunderstorms are a normal and natural occurrence in Indiana. However, there is no accepted definition of a normal level of storm activity. IPL solves the dilemma by calculating indices both with and without storms. We can therefore make valid year-to-year comparisons of our performance without storms while also reflecting a true picture of performance. Please note that, because of their infrequent occurrence, Level III storm events (see definition below) are always excluded from IPL reliability index calculations.

IPL outage events are defined as:

a. Level I – 500 to 10,000 customers affected, and power is restored in 24 hours.
b. Level II – 10,000 to 10% of customers affected, and power is restored in 24 – 48 hours.
c. Level III – > 10% of customers affected, and power is restored to all customers in > 48 hours and mutual assistance crews are called.

5. **How do service territory differences (e.g., rural versus metropolitan, high industrial concentration versus more residential) affect the calculation of reliability statistics? What statistic, if any, is most indifferent to the service area characteristics, in other words, what statistic(s) would most likely allow relevant comparisons among a wide variety of utility types?**

Utility service territories and reliability index results are unique and difficult to compare. The size and terrain of the service territory, the size and density of the customer base and the design and construction of the distribution system are all elements that affect system reliability and a utility's response capabilities. If reliability comparisons are made between utilities, care should be taken to identify utilities comparable in size, setting, customer base and configuration. There is no clear industry opinion on which reliability index is (or should be) more consistent from one utility to another.

6. **Can the calculation of reliability indices be standardized among Indiana utilities? Please explain how that might be done.**

Reliability index calculations could be standardized among Indiana utilities by simply adopting a common methodology such as IEEE Std 1366-2000 entitled, "Trial Use Guide for Electric Power Distribution Reliability Indices". It should be noted that even among utilities that have adopted this standard there is some variation on the length of time distinguishing momentary and sustained outages. Adopting a uniform definition would skew comparisons with historical results.

Some utilities may not have the equipment and/or data necessary to calculate some of the less common indices. For example, the Momentary Average Interruption Frequency Index (MAIFI) calculation requires data from utility EMS/SCADA infrastructure that measures momentary interruption events throughout the distribution breaker and re-closer schemes.

7. **Should utility size or other characteristics be taken into consideration when evaluating the reliability statistics from a company?**

Yes, a number of characteristics should be taken into consideration when evaluating reliability statistics including, but not limited to, service territory size, customers served, customer density, territory setting (i.e. rural vs. urban), average customer size, etc.

8. **Are performance evaluations and the resulting compensation for any individual, groups of individuals or divisions of the utility tied to reliability statistic results? Please explain what reliability statistics are used and who is evaluated based on the results of those statistics. How are the acceptable levels of performance set and what are those levels?**

The eight IPL Service Quality Settlement Agreement standards are summarized below:

Standard	Target	ASA	Calls Answ.
CAIDI w/ Storms	87.90		
SAIDI w/ Storms	81.05		
SAIFI w/ Storms	0.95		
CAIDI w/o Storms	58.78		
SAIDI w/o Storms	39.83		
SAIFI w/o Storms	0.67		
Call Center ASA (sec)		60 sec	

Call Center Storms:			
Min. ASA or Calls > 2 hrs		300 sec	400
Min. ASA or Calls > 4 hrs		240 sec	670
Min. ASA or Calls > 8 hrs		180 sec	1300

The above standards were established, per a Settlement Agreement, at levels that will require improved IPL performance compared to the last few years. As a company, if we achieve at least 6 of the 8 performance standards during each quarter for an entire year (including the CAIDI w/o storms measure) all IPL employees will receive a $1,000 bonus for the year. If we fall short of this objective in any quarter, IPL employees will forego the annual bonus and IPL will issue bill credits to all IPL residential and small commercial customers for that quarter.

Some IPL departments may consider company reliability index results during group/individual performance and compensation reviews but there are no other formally structured programs in place that directly tie reliability targets to individual compensation.

Worst Circuits

In order to prevent utilities from having "pockets" of poor service reliability, some state commissions require utilities to report the top 10-25 worst circuits and then address those problem areas.

1. **Are there areas of your utility's service territory that are more prone to outages, either sustained or momentary, or other reliability problems, such as power quality, than others? How does your utility address this type of problem?**

Some IPL distribution circuits experience more sustained and/or momentary interruptions than others. The length of the circuit, geographical terrain, tree population, animal habitat, and traffic patterns are all contributing factors. Long circuits and circuits in heavily wooded areas tend to be more prone to sustained and momentary interruptions. Likewise, faulty equipment (i.e. lightning arresters) in certain areas can contribute to this problem as well.

Distribution circuits that experience a high number of repeated sustained and/or momentary interruptions are identified for analysis and review. A circuit analysis consists of a design and operating review of the entire circuit. Some of the functions performed during a circuit review include line patrol to visually identify problems, infrared testing to identify equipment near failure, radio frequency interference testing to identify faulty lightning arresters, review of UG cable fault records, and circuit design modeling. A circuit analysis may result in additional circuit maintenance work, installation of additional equipment, tree trimming, load balancing, switching, etc.

On the transmission system, protective relay operation records are used to identify and evaluate facilities that are prone to sustained or momentary interruptions. Other than occasional problems caused by roosting birds, there are no real problem areas. Sustained and momentary interruptions on the transmission system are infrequent due to line and substation construction methods and the network configuration of the system. IPL analyzes protective relay operations for correct tripping

performance. Corrective actions due to false tripping or other problems may include additional maintenance, equipment replacement and/or system upgrade projects.

2. **What are the advantages of identifying the top worst performing circuits of a utility?**

The advantage of identifying and/or reporting the worst performing circuits to the Commission is to assure these circuits are identified and analyzed for corrective action on a routine basis. This should ultimately increase the satisfaction of the customers connected to those circuits and improve overall system reliability. Presently, IPL identifies the top worst performing circuits on our system, determines the root causes of the problems and implements appropriate corrective action.

3. **What are the disadvantages of identifying the top worst performing circuits of a utility?**

The disadvantage of regulatory reporting of the top worst performing circuits is the potential to focus disproportionately more utility attention on those circuits and less on other circuits with other significant problems. Also, generic problems on many circuits may receive less attention and focus and this could result in lower overall customer satisfaction. It would be unreasonable to expect no variation among the performance of various circuits. Systems are dynamic. If we are not careful, we could find ourselves responding to natural variations in the systems, thus diverting attention from other needy areas and forcing ever higher standards where they are not justified (by continually responding to the tail of the distribution curve when natural variation would cause different circuits to occupy the tail at various times). Finally, additional reporting requirements may require additional manpower.

Power Quality

1. **Based on your utility's interaction with its customers, is power quality an important concern of your customers? What aspects of power quality are of particular concern (voltage sag, high or low voltage, voltage spikes and transients, flickers, surges, harmonics, other)? Please explain. Are there typical types of customers or customer classes that voice a greater concern about power quality than others? Please explain. How has your utility addressed these concerns?**

Power Quality is a concern for some IPL customers. The power quality problems affecting the greatest number of residential customers are momentary interruption events and various problems caused by poor wiring and grounding practices on the customer's side of the meter. The problems affecting the greatest number of C&I customers are momentary interruption events on the distribution system, voltage sag events and various problems caused by poor wiring and grounding practices on the customer's side of the meter. Impulsive transients (Lightning Events) affect all customer classes. A summary of the IEEE Std 1159 PQ categories and IPL related initiatives follows:

- Momentary Interruption Events

  All customers on a distribution circuit momentarily lose power during this event due to the radial configuration of the system. On average, 1000 customers are affected from each

momentary interruption on the IPL 13KV general distribution system. Today, blinking clocks notify and remind customers of each momentary interruption. Momentary interruptions on the transmission system are less frequent due to line and substation construction methods and the network configuration of the system. Thus, C&I customers serviced directly from the transmission system experience considerably fewer momentary interruptions compared to residential customers which are served on the distribution system.

In an attempt to reduce momentary interruptions, IPL studied the impact of replacing instantaneous tripping with time delayed tripping for distribution system faults on certain IPL distribution circuits. The study results concluded this change would reduce the number of momentary interruptions experienced by most customers but would also result in more sustained interruptions for some additional customers. In addition, this change would also tend to increase the SAIFI and SAIDI indices and increased voltage sags for C&I customers fed from dedicated 13KV distribution circuits.

IPL recommends that customers (with extreme sensitivity to power quality) install power quality mitigation equipment, such as online uninterruptible power supplies (UPS), to ride-through momentary interruption events. To assist customers regarding PQ mitigation equipment, IPL provides customers a PQ Vendor Referral list for their consideration. This list consists of local distributors and suppliers of power quality mitigation equipment and licensed contractors for proper installation.

The final method used by IPL to address this problem is customer education. IPL provides education leaflets to customers that explain different power quality problems and solutions. These leaflets are titled “Why does my power blink on and off” and “Solutions to Power Quality Problems in the Home”.

- Voltage Sags

Generally, voltage sags are caused by faults on the power system. Switching of large loads or the starting of large motors can also cause voltage sags. A voltage sag may cause a trip of customer equipment due to a dip in voltage. The sensitivity of a customer to a voltage sag depends upon the fault location relative to the customer location, fault type, fault duration, fault current, fuse size for distribution faults, instantaneous or fast tripping philosophy, customer ride-through capability, etc. C&I customers typically experience the greatest effect from voltage sags and may experience problems with their manufacturing process.

IPL recommends many of the same methods outlined above for voltage sag problems. Mitigation equipment such as UPS can be used by larger C&I customers for small load applications. Protecting C&I customers with larger loads (i.e. adjustable speed drives) may require sophisticated PQ mitigation equipment. However, most large C&I customers elect not to install this PQ mitigating equipment for cost reasons.

- Various categories due to poor wiring and grounding practices

Simultaneous over and under voltages can be an indication of an open neutral condition in customer wiring or service entrance cables. The over voltage associated with an open neutral condition is dangerous because a fire can start from equipment failure. Loose connections and defective main breakers can show up as voltage fluctuations (flicker), sags, swells and momentary interruptions. Multiple ground points and poor grounding practices can be associated with transients, voltage sags and swells, and voltage fluctuations. Multiple ground points can cause equipment failure during certain customer plant operating conditions or faults on the power system. Some equipment manufacturers recommend a ground that is separate and isolated from the single point grounding system required by the National Electrical Code (NEC). A separate isolated ground can always be developed by the installation of a separately derived system, as identified in the NEC. However, the extra cost of a separately derived system or lack of understanding of this issue may result in the improper installation of multiple ground points.

At times, IPL engineers and Power Quality specialists help customers diagnose these problems. Temporary installation of PQ monitoring equipment is often used by IPL to identify a problem. The PQ Referral list is also available to customers for their consideration. This list includes licensed contractors who can be hired by customers to correct customer wiring and grounding problems. IPL has also sponsored well-attended educational seminars for customers on various power quality topics.

- Impulsive Transients (Lightning Events)

According to IEEE Std 1159, "An impulsive transient is a sudden non-power frequency change in the steady state condition of voltage, current or both." Lightning is the most common cause of impulsive transients. Damaged utility and customer equipment may result from a lightning event.

All customers can be affected by a lightning event. Without proper protection, these events can cause extensive equipment damage. IPL has addressed this concern by recommending the installation of surge protection equipment to customers. IPL has educational leaflets that are available to customers to explain this issue such as, "Solving Power Quality Problems in the Home". The PQ Referral List contains a list of local distributors of surge protective equipment and licensed contractors for proper installation. The customer is under no obligation to use this list.

2. **Does your utility have any program or plan in place specifically addressing power quality issues? Please explain. How have these programs or plans changed over the last five years?**

Yes. The IPL PQ program is designed to assist customers with all categories of Power Quality issues. The program components include problem identification, PQ monitoring of electrical facilities on either side of the customer meter, PQ Referral list of suppliers and contractors, leaflets for customers addressing common PQ problems, customer education including seminars and PQ advice for contractors contained in the IPL Electric Service and Meter Manual. Current IPL leaflets that are

available to customers include "Why Does My Power Blink On and OFF" and "Solutions for Power Quality Problems in the Home". IPL recently sponsored seminars on Surge Protection and IEEE Std 1100 on Powering and Grounding of Sensitive Electronic equipment.

The PQ function has been part of the Distribution Operations department since 1998. Prior to 1998, the PQ function was distributed among various departments at IPL. Otherwise, the IPL PQ program has remained relatively unchanged.

3. **Does your utility collect/track any type of power quality related data? If so, what data is collected and how is it used by the utility?**

IPL started to record and track problems in the early stages of the PQ program. The data was tabulated based upon the PQ categories contained in IEEE Std 1159. Initially, this data was used to quantify the magnitude of PQ problems on the IPL system.

4. **Is power quality data used as a performance measure for compensation for any person(s), groups and/or divisions in your utility? Please explain what data is used and why.**

No. Some IPL departments may consider power quality data during group/individual performance and compensation reviews but there are no formally structured programs in place that directly tie power quality performance to individual compensation.

Leading Indicators

While it's important to restore service as quickly as possible following an outage, when practical, it is better to prevent the outage from occurring.

1. **What are good leading indicators of possible service outages? Does your utility routinely monitor specific aspects of the electric operations or system with the goal of preventing service outages? What do you monitor and why?**

- **Weather**– This is the number one driver of **service** reliability in terms of interruption frequency and duration. Utilities can take certain steps (such as effective tree trimming) to minimize weather damage to some degree.

- **Trees** - Trees are another large driver of both momentary and sustained interruptions. This item is in large part related to weather as well. The utility has control over trees only to the extent that it can trim the trees. It is virtually impossible to eliminate all the hazards of trees in a storm situation.

- **Distribution Equipment Failures** – This equipment is selected, installed, operated and maintained by the utility, so to some extent it is within the utility's control. Regular maintenance

can reduce some failures, but much of this equipment has a very long life expectancy and is designed to operate to failure. Equipment failures do occur but rarely affect large numbers of customers.

- **Animals** – Animals **create** a fairly large number of interruptions, and the utility can take some measures to prevent these occurrences, but cannot totally eliminate them.

- **Transmission Facilities** – These facilities have historically been treated very much like a utility's distribution facilities with similar exposures, but with more redundancy built into the system. A visual inspection is performed at least once a month of each transmission substation. The inspection looks for anything that looks, sounds, or smells out of the ordinary. Liquid levels in equipments are checked, temperature gauges are checked for high and low peaks, and the physical condition of transformers and breakers are visually checked.

- **Maintenance Schedules and Strategies** – IPL attempts to minimize any scheduled maintenance outage, and assures that except in an emergency, a scheduled outage is at a time which will cause the least inconvenience to customers. Transmission and generation maintenance is primarily controlled by the utility but is becoming more regional in nature because of the creation of the MISO and the resulting necessity for the coordination of utility maintenance schedules.

  IPL routinely monitors transmission line loadings, substation equipment loadings and alarms, and breaker operations. At the primary feeder leaving the substation we monitor the status of the breaker, the substation bus voltage and, for most circuits, at least one analog current value. With the 60 automated switches on some main line distribution circuits, all three voltages and currents can be monitored via the EMS and SCADA systems.

  In 2002 a new distribution capacitor control software application was implemented by IPL. This software allows one-way control of most of our 1200 primary capacitor banks used for voltage support on the electric power system. With the replacement of the EMS this new software program can be tied into the MVAR readings on the substation transformer. This system will automatically check the successful operation of capacitors by validating with the appropriate change in MVAR flow at the substation transformer. Historically, capacitor banks require very high maintenance and line patrol inspections twice a year to verify proper operation. The inspections are conducted prior to seasonal peak load conditions.

  The goal of all this monitoring is to provide better customer reliability. This monitoring can sometimes provide equipment alarm/loading information that allows us to take actions before failures occur.

2. Does your utility have a routine inspection and maintenance plan/procedure in place designed to prevent the possibility of service outages? Please explain the plan/procedure.

IPL presently has the following plans at the distribution level:

- **Engineering Review of Distribution Fusing** – IPL is currently conducting a review of general distribution circuits. Placement and size of fuses are being checked during this process. Fuses are added when it makes sense to help limit the number of customers affected by interruptions. Fuses are also reviewed to confirm appropriate size and coordination.

- **Distribution Reliability Task Force** - This group is focused on improving IPL power system reliability performance. The purpose of the Task Force is to develop plans to meet reliability indices, establish long term maintenance programs and review new technologies to improve reliability and power quality for customers.

- **Line Patrols -** Patrols identify and correct problems on the worst performing circuits.

- **Infrared Testing -** Infrared equipment is used to identify equipment thermal problems before failures occur.

- **Radio Frequency Interference (RFI) Testing -** RFI is being used to identify faulty lightning arresters on circuits so they can be replaced in a timely manner.

- **Line Clearing -** Additional line clearing crews have been added to the production tree trimming efforts. This should advance the IPL production tree trimming schedule by approximately 3 months.

- **Line Crews -** Line crews are fixing the problems identified by the Line Patrols, infrared inspections, and RFI inspections. One of the criteria for work prioritization is anticipated reliability improvement.

- **Pole Treatment Inspection and Maintenance –** IPL inspects and treats poles for decay and rot. Approximately 10% of the older transmission and distribution poles are inspected/treated each year.

- **Standards Group** – This group of IPL engineers, operations personnel, and field personnel review IPL construction standards, approve equipment, and provide procurement support. When questions arise regarding distribution construction practices or poorly performing equipment, this group helps recommend solutions.

3. **Has this plan/procedure changed in the past five (5) years? Please explain the changes and why they were made.**

IPL procedures have not changed significantly in recent years but our priorities and emphasis may change periodically. For example, the lightning arrestor replacement program and the engineering review of fuse placement/size are current IPL priorities.

4. **Has your utility made any study or analysis as to how successful your inspection and maintenance plan/procedure has been in preventing service outage? Please explain.**

IPL has not done a formal analysis on this but we are studying a method to evaluate our resource utilization based on cost per customer interruption avoided. Regarding the distribution system, our recent experience suggests that infrared thermography and engineering reviews provide more benefit than routine line inspections and that production tree trimming is more effective than hot spot trimming.

5. **Does your utility have a vegetation management plan/procedure in place designed to prevent the possibility of service outages? Please explain the plan/procedure.**

Yes, IPL manages vegetation based on guidelines endorsed by national and international organizations, including the National Arborist Association, the International Society of Arboriculture, the Utility Arborist Association, the American National Standards Institute and the National Arbor Day Foundation. Like a majority of utilities across the country, IPL uses directional pruning methods based on ANSI 300, the dominant standard for proper tree care and the practices described by Dr. Alex Shigo in his Field Pocket Guide for Qualified Line-Clearance Tree Workers.

At this time, distribution trimming is based on a 36 month trimming cycle.

6. **Has this plan/procedure changed in the past five (5) years? Please explain the changes and why they were made.**

IPL has worked to improve its vegetation management practices in a manner which is consistent with emerging industry standards and practices. As is reflected by its endorsement by national and international organizations and use by a majority of utilities across the country, directional pruning is healthier for the tree because it prescribes a smaller number of total cuts to the tree, reduces the likelihood of tree related interruptions (including monetary interruptions), and is safer for tree trimming personnel and IPL line employees working to maintain and restore service. Because of the sensitivity of commercial, industrial and residential equipment, momentary interruptions are particularly disruptive to customers and have caused increasing focus on vegetation management.

7. **Has your utility made any study or analysis as to how successful your vegetation management plan/procedure has been in preventing service outage? Please explain.**

IPL continually monitors the tree related CAIDI, SAIFI, and SAIDI outages. Additionally, many momentary interruptions are caused by trees contacting power conductors. The large number of tree related outages over the last few years (as high as 47% of total outage minutes) caused additional focus on our vegetation management program. Clearly, vegetation management is critical to maintaining service reliability.

8. **Does your utility identify/track the age of equipment used in the production and delivery of electricity to the customer? Why or why not?**

IPL tracks the age of certain types of power equipment. Most substation equipment, transformers, and poles have known ages. Tracking most of the other equipment individually is not cost effective.

9. **Could equipment age be used as a leading indicator of potential service outages? Would this be an effective indicator of potential service outages? Please explain.**

Age alone should not be used as a leading indicator of potential service interruptions. Age has some effect, but it is not as significant as other indicators such as: maintenance history, equipment manufacturer, equipment type, loading history, construction, etc.

10. **Does your utility track equipment used in the production and delivery of electricity to the customer to identify equipment that tends to have a premature or unpredicted failure rate or degraded performance level? Why or why not?**

Yes. IPL tracks poor performing equipment (such as the lightning arresters mentioned earlier). IPL also tracks the number of times a segment of underground cable has failed. This helps identify when an entire segment of underground cable should be replaced. The purpose of this tracking is to reduce interruptions associated with inferior equipment and to identify equipment that is at the end of its useful life.

11. **Could the identification of equipment with premature or unpredicted failure rate or degraded performance level be used as a leading indicator of potential service outages? Would this be an effective indicator of potential service outages? Please explain.**

It is useful to identify equipment with high failure rates; however, with the number of variables involved it is difficult to identify a specific leading indicator.

12. **Are there any other methods (e.g., infra-red inspections or radio frequency inspections) you carry out to help maintain and/or improve system reliability? Please describe the methods you use.**

As previously mentioned, IPL uses both infrared and radio frequency inspections. We also have 60 automated distribution switches and extensive distribution SCADA provided information along with capacitor bank software that provides good control and information on the status of the distribution backbone.

Another area that may provide better response time in the future is leveraging IPL's investment in automated meter reading (AMR) to better detect outages and confirm when service restoration is complete. The AMR system can lend itself to more than just reading meters. With IPL's implementation of a new OMS, an integration to take advantage of some of the outage data, outage verification capabilities, and restoration verification from the AMR system is being explored.

Setting Performance Standards

1. **Does your utility set any type of performance standards relating to service reliability and quality as a method of determining employee and/or division performance for**

compensation purposes? What are these standards? How are they measured? How do they affect the overall compensation for a (n) employee and/or division?

The IPL Service Quality Settlement Agreement was approved by the IURC on February 6, 2002 and became effective April 1, 2002. The agreement includes a 3 year term and consists of eight (8) performance measures:

Standard	Target	ASA	Calls Answ.
CAIDI w/ Storms	87.90		
SAIDI w/ Storms	81.05		
SAIFI w/ Storms	0.95		
CAIDI w/o Storms	58.78		
SAIDI w/o Storms	39.83		
SAIFI w/o Storms	0.67		
Call Center ASA (sec)		60 sec	
Call Center Storms:			
Min. ASA or Calls > 2 hrs		300 sec	400
Min. ASA or Calls > 4 hrs		240 sec	670
Min. ASA or Calls > 8 hrs		180 sec	1300

The above standards were established per the Settlement Agreement at levels that will require improved IPL performance compared to the last few years. As a company, if we achieve at least 6 of the 8 performance standards during each quarter for an entire year (including the CAIDI w/o storms measure) all IPL employees will receive a $1,000 bonus for the year. If we fall short of this objective in any quarter, IPL employees will forego the annual bonus and IPL will issue bill credits to all IPL residential and small commercial customers for that quarter.

2. **Could similar standards be set by the Commission to help evaluate and compare the service quality of Indiana utilities? Please explain why or why not.**

It would be difficult to measure and compare all Indiana utilities based on the same service quality standards because each company is unique. Utilities have differences in service territories and loads served. Customer perceptions of adequate service are largely based on the levels of service they have experienced over a period of time. Some minimum standards could be set for utilities with an incentive for companies that exceed the standards.

Using a company's current level of reliability as a benchmark to set future reliability standards for individual companies may hurt companies like IPL that have invested millions of dollars in automation equipment and maintain a 24X7 outage response operation. The better the reliability a company currently provides, the more expensive it is to achieve incremental improvements. In other words, it is much less expensive to move from a SAIFI of 1.5 to 1.4 than it is to move from a SAIFI

1.0 to 0.9. It would be unfair to base any incentive solely on improving a company's current level of reliability. That would have the effect of penalizing utilities that have historically performed well.

Companies like IPL that have historically done a good job of providing high quality service should not be penalized for continuing to provide that same quality of service. Conversely, companies that have done a poor job of providing service should not be rewarded for bringing that quality of service up to acceptable standards.

3. **If these standards are not appropriate to help evaluate and compare the service quality of Indiana utilities, please suggest some standards that would be appropriate.**

It would be difficult to fairly adopt uniform standards of service for all utilities because of the differences in service territories, loads served and their current reliability performance. For example, it is very difficult to compare a rural utility to an urban utility. A rural utility interruption might take longer to repair just because the travel time is much longer. By the same token, a similar circuit interruption at an urban utility would possibly affect a larger number of customers because of the increased customer density. Careful consideration of balancing these various differences would be required before setting any standard.

4. **To date there has been little or no use of I. C. 8-1-2.5 by utilities to propose performance based rates that would tie utility incentives/penalties to reliability and other measurable performance criteria. Is there a problem with how I. C. 8-1-2.5 is structured that makes it inappropriate or ineffective as a vehicle for performance based rates? Please explain. From your perspective (utility, customer group, other) what are the pros and cons of performance based rates?**

IPL has experience with the Alternative Utility Regulation statutes (Alt. Reg.); IPL's Elect Plan was approved under the Alt. Reg. statutes. IPL also adopted an alternative regulatory plan pursuant to Indiana Code § 8-1-2.5 for new classifications of service and for changes to its tariffs to provide for the adoption of an air conditioning cycling program. In addition, the Commission declined to exercise its jurisdiction over IPL's construction of an additional 85 MW of combustion turbine capacity under the provisions of IC § 8-1-2.5. Although we have made no specific review of the statute regarding performance based rates, our experience is that the Alt. Reg. statute is effective legislation that gives utilities the flexibility to request Commission approval of innovative ideas.

Current Indiana utility law and regulation are effective. Indiana electric customers enjoy low rates and high quality service. Performance Based Rate Making (PBR) may be an effective way to enhance current Indiana utility law. The biggest challenge to PBR is to establish fair performance standards and incentive plans for all utilities.

Safety:

1. **Is your utility participating in any EPRI (or other organizations) research projects relating to safety? If yes, please describe the project(s) you are involved in and how it relates to safety issues addressed in this section of the data request.**

No.

2. **What actions to ensure public safety are taken, both by the utility and other emergency resources, when a live power line has come down? Please explain the activities from the time a live power line is reported down until it has been repaired or rendered safe.**

There are events beyond the control of any electric utility that have the potential to cause harm resulting from contact with electrical current from downed power lines. Although IPL cannot "ensure" public safety, it is our goal to limit public exposure by installing control devices that detect fault current and automatically isolate the downed power line from the system. In some cases, these control devices do not detect enough fault current to activate the isolation device and a live downed power line may be present where the public could have potential exposure. In most of these cases, IPL receives a phone call from the public and/or EMS notifying IPL of the potential problem. The service dispatcher who receives the call promptly dispatches a troubleman (single man line crew) to respond to the reported downed power line. After the troubleman arrives at the scene he/she assesses the situation and confirms that it is in fact a live downed power line. Once confirmed, the troubleman:

a. Opens a fused disconnect (switch) to isolate the spur, or
b. Opens line switches to isolate a larger section of a circuit, or
c. Contacts service and load dispatch to request that the entire circuit be dropped until the downed line can be cut and isolated from the system. This action will result in a large outage until the downed line is cleared.

There are times when the service dispatcher receives an emergency call directly from EMS where someone may be in imminent danger (i.e., people trapped in car with burning line on top of it) and the service dispatcher, in coordination with load dispatch, will drop the entire sub station to de-energize the line until the condition can be made safe.

Members of the public also bear responsibility to recognize a downed power line as an obvious danger and to avoid it. IPL provides safety information to the public to advise them of this potential hazard. After significant storms, IPL generally enjoys great media cooperation in advising the public of the danger of downed lines.

3. **In situations where live power lines may be down in multiple locations, how is public safety ensured?**

Again, IPL cannot "ensure" public safety. In addition to the responses to question 2, IPL tracks weather systems that have the potential to cause damage in our service territory. As a storm approaches, team leaders, schedulers, dispatchers, etc. start calling in additional help (off shift internal crews and crews outside of IPL). With these additional resources, IPL can respond to a larger number of reported downed power lines.

A separate area adjacent to the dispatch center at IPL has been established to answer and respond to all police and fire calls. The calls are prioritized and dispatched in a prompt manner.

Where power lines are down in multiple locations such as during storm conditions, IPL and the Fire Department have worked together to develop a notification system for public safety. The notification system consists of fluorescent tape with bold printing that says DANGER/WIRES DOWN. Fire Department personnel use this tape to rope off the area where power lines are down in multiple locations. This helps ensure safety of the public until IPL field personnel arrive to repair the damage.

IPL has developed training tools for Fire and Police department personnel. The tools consist of onsite training and instructional CD materials for later use. The training instructs public safety personnel in situations concerning downed power lines.

4. **In critical weather situations where widespread areas may experience outages or downed power lines, is there any central coordination (beyond each individual utility) of the restoration of service and the repair of down lines? Please explain who does the coordination and what organizations are involved.**

Generally, no. However, in critical weather situations, such as the recent September 20, 2002 thunderstorms/tornadoes, the Marion County Emergency Management Authority, MECA, has acted as a central coordination point at specific locations of the service territory where widespread public safety is in jeopardy due to downed power lines. IPL coordinates with MECA to disconnect power to widespread areas, if required. Mock drills are conducted by MECA to prepare for these situations. This helps to ensure successful implementation of emergency plans and communication prior to such events.

5. **What could be done to improve the public awareness of the hazards that may exist as a result of weather related power outage? How does your utility inform customers of these types of hazards?**

IPL provides public safety statements to the various media outlets in our service territory that contain warnings regarding downed power lines. IPL also provides our customers with electrical safety information in the form of bill stuffers, informational pamphlets, presentations to schools and community groups, and training to local emergency responders.

6. **What is the most typical accident involving utility facilities that happen to utility personnel and to non-utility/customers/the general public? What has your utility done to help try and alleviate these types of accidents?**

The most common injuries/illnesses (from OSHA 200 logs 1997-2001) that our Transmission and Distribution employees incurred were injuries that resulted from overexertion (lower back strains). The second leading injury type for the same time period was minor hand lacerations. IPL offers a number of programs to address cumulative trauma disorders (CTD) including our industrial athlete program that is designed to strengthen connective tissues and reduce the risk of chronic CTD. IPL provides employees with leather work gloves to assist in the prevention of hand lacerations.

Motor vehicle accidents are the most typical type of accident involving our utility infrastructure and the public and/or customer. These accidents generally occur from:

a. A customer owned vehicle striking an IPL distribution pole; or
b. A vehicle accident involving a customer owned vehicle and an IPL fleet vehicle.

IPL follows local and state guidelines with regards to placing our utility infrastructure within the public right-of-way. IPL also provides defensive driving training to our Commercial Driver Licenses (CDL) drivers.

7. What is the current average term of employment for service and line crew personnel? Does your utility provide on-going safety training for your line and service crews? Please explain the types of training these crews receive.

As of November 15, 2002, the average term of employment of service and line crew personnel (Troublemen, Service Dispatchers, Service Installations, Substation Mechanics, and Underground and Overhead Linemen) is 16.9 years.

IPL provides on-going safety-related training as required by 29 CFR 1910.269(a) and by other specific OSHA standards. Examples of training that the service and line personnel receive include, pole top rescue, CPR, defensive driving, PPE, Class III asbestos abatement (required by IDEM), and confined space entry training. IPL has a lineman apprenticeship program that has specific skills and safety training objectives that must be met before the apprentice can move up in class within the lineman classification. As the apprentice moves up in class, the work becomes more technically difficult and potentially more hazardous.

8. Commission rules currently require utilities to report accidents resulting in death. Do you think this rule provides useful information to the Commission? Please explain. Do you have any recommended changes that would make this rule more useful? Please explain.

IPL believes that I.C. 8-1-2-114 authorizes the Commission to gather whatever relevant information it deems necessary and IPL is not in a position to recommend any changes to the current statute or corresponding rule (170 IAC 4-1-24).

9. What other organizations or agencies must you report to when there has been an accident, injury or fatality? Please explain what must be reported, under what circumstances and in what time frame from when the incident occurred.

The Indiana Department of Labor (IOSHA) must be notified within 8 hours after death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident. Employers in the State of Indiana must comply with 29 CFR 1904.39 "OSHA – Recording and Reporting Occupational injuries and Illnesses".

10. **The Commission is aware that in preparation for Y2K utilities developed emergency operating plans (EOP). Does your utility continue to maintain and update an emergency operating plan? What circumstances or conditions are the EOP designed to cover? Is the EOP prepared and/or modified completely by utility personnel or do other organizations or agencies have input to the plan? Please explain how outside sources have input to the EOP. Does your utility routinely run drills on the EOP to check the effectiveness of the plan and to identify areas, which need improvement? Please describe your drilling procedure.**

The IPL Y2K EOP was a roll-up of several existing EOP and procedures compiled in one plan to address multiple system failures as a result of a complete Y2K meltdown. IPL maintains four main EOP designed to address customer service and system reliability:

- **Emergency Service Restoration Plan -** to address the loss of our distribution system.
- **Emergency Power Supply Plan** - to address a shortage of generation capacity.
- **Black Start Plan -** to address the total loss of our generation capacity.
- **Emergency Transmission Plan -** to address the loss of our transmission network.

These plans were developed using both internal and external resources. The plans are reviewed periodically by the plan administrator.

From a safety perspective, each of our facilities have emergency action plans to address employee and public safety while in our office buildings and generating stations. These emergency action plans address a variety of potential hazardous situations and conditions such as severe weather, fire, security issues, chemical spills, and evacuation procedures. Fire drills and severe weather drills are conducted at least once a year.

IPL has hazard specific EOP as required by OSHA. Each of our generating stations has a chemical response plan to address the uncontrolled release of hazardous chemicals. Specially trained chemical responders receive annual training to maintain their responder status. Local emergency responders are often invited to tour our facilities and train with the IPL responders.

Customer Service:

1. **Is your utility participating in any EPRI (or other organizations) research projects relating to customer service? If yes, please describe the projects(s) you are involved in and how it relates to customer service issues addressed in this section of the data request.**

IPL participates in the following projects relating to customer service:

· IPL's Customer Advisory Board - IPL has recently established an Advisory Board in an effort to help further promote solution oriented customer satisfaction by obtaining direct positive and constructive feedback from the Board members. The Board is comprised of a representative group of IPL customers from a variety of personal backgrounds, interests, and locations within our service territory.

· PA Consulting - Lead Data Collection and Administration

- North American Utility Best Practices Benchmarking - IPL is a Sponsor/Participant in the North American Utilities Benchmarking exercise with 42 Utility Companies, facilitated by PA Consulting. We are participating in this exercise in an ongoing effort to measure Customer Service Metrics and derive clear and significantly comparative industry Benchmarking standards. Our goals are to derive substantial targeted development goals and selection of best practices to obtain our established goals.

- Worldwide Utility Key Performance Benchmarking - IPL is a Participant in a global AES Distribution Companies Benchmarking exercise facilitated by PA Consulting. PA Consulting derives pertinent metrics supplied from our participation in the North American Utilities Benchmarking exercise and converts it for inclusion into this exercise.

2. Please describe your utility's customer service philosophy and how your utility implements this philosophy.

IPL's customer service philosophy is simple and universally applied throughout IPL. IPL's goal is to provide our customers with reliable, low cost electricity. The manner in which we carry out this objective is through consideration of the following:

- Operating in a way that is both safe for IPL people and the public.
- Demonstrating respect for the environment.
- Being a good corporate citizen.
- Providing a work environment in which all IPL people have the opportunity to learn more about our business and contribute in ever more meaningful ways.
- Balancing the needs of all stakeholders.
- Recognizing that achieving a high level of customer satisfaction is an ultimate goal.

3. How many employees are directly engaged in customer service types of activities and where do they fit in the utility's overall organizational structure? An organizational diagram maybe useful in responding to this question.

At IPL it is incumbent upon all IPL employees to recognize and support the value and critical importance of exemplary customer service and satisfaction. The IPL Customer Service organization typically has the most direct customer contact and interaction. This group of approximately 190 IPL people is responsible for the Call Center, Walk-in Service Center, customer billing, and information

systems. IPL Exhibit A (attached) provides an organizational overview of IPL, including the Customer Service organization.

4. **Assuming there are a variety of activities than can be considered "customer service" please describe the different types of activities your utility classifies as "customer service" and how many employees are engaged in each activity.**

IPL Exhibit B (attached) provides an organizational overview of the IPL Customer Service organization including the number of employees by department and a brief description of associated responsibilities.

5. **Please provide a brief description of the qualifications required by employees engaged in the various customer service activities described in response to the previous question. Have these requirements and protocols changed over the past five years? Please explain.**

The qualifications vary for each position, however, Customer Services qualifications range from high school diploma to specialized college degrees and/or equivalent work/technical experience. The qualifications for hiring have not changed over the past five years. There have been moderate protocol adjustments over the past five years, but none were significant. IPL Customer Services' internal job posting criteria has not been modified. We are obligated to follow our Company and Union posting guidelines as indicated contractually.

Customer Service Representative requirements, more specifically, are outlined as follows:

<u>Education/Experience</u>

- Applicant Requirements: High School Degree or equivalent with one or more years of college or technical training, or equivalent with one to three years experience as a Customer Service Representative. We offer some consideration to experience in direct customer service activities, where courteous communication and listening skills are a demonstrated requirement. Job history and references are requested and verified.
- Candidate Requirements: Successful candidates must further demonstrate core competency by achieving satisfactory results utilizing standard Prove-It Testing guidelines. Areas of Prove-It testing include Customer Service Skills, Data Entry Skills, Listening Skills, and Math Skills. Candidates must acknowledge and be willing to embrace IPL Customer Services' Teamwork environment and our high level of expectations regarding professionalism.
- Training Requirements: Customer Service Representatives must successfully complete the Customer Service Training Program. This class is conducted over a six to eight week period. An overall score of 90% is mandated for successful class completion.

6. **Please describe any equipment and/or facilities that are specifically designed to help the utility to communicate with its customers and to enhance customer service.**

IPL Customer Services recognizes and values the ever-increasing needs of our customers for time and value driven quality Customer Service. We are strongly committed to meeting our customer needs and utilize a variety of equipment and facilities to accommodate our customer's needs.

Services and Corresponding Technology

Call Center

- Call Center Management Information System (CCMIS) - statistical tracking, reporting, and phone queue management.
- Work Force Management - Implementation scheduled in 2003.
- Payment arrangements
- IPL services information and scheduling
- IPL Billing inquiries and solutions
- At Home Call Takers - IPL typically manages between 15-25 existing IPL employees, additionally established and available to address customer inquiries from the comfort of their own homes during outage/storm events.

Outage Management System (OMS)

- Utilization of this tool enables Customer Service Representative real time accessibility to IPL restoration information and activity.
- IPL Customer Services offers OMS functionality and usage education to IPL employees throughout our organization. This enables broad capabilities for call taking resource utilization in outage/storm events.

Automated Phone System (IVR) -

- Outage Self-reporting - outage reporting available to customers independent of direct Customer Service contact.
- ExpressCheck™ - check payment via phone
- Bill Matrix - Credit/Debit payment via phone
- Current account information

Walk in Facility - located at 2102 N. Illinois St., Indianapolis, IN.

- Payment Processing
- Complete Customer Service transactions available
- Energy Assistance liaisons
- Pay Agents - IPL offers a wide variety of Pay Agent locations throughout our service territory.

On-line Services - IPL Web-based Customer Service functionality

- Account information
- Connect or transfer of service
- Enrollment in alternative payment options
- Customer Educational materials
- Contact us

Special Services

- TTD/TTY Phone services
- Braille/Enlarged Bills
- Customized payment plans
- Medical Alert Program
- Third-party notification
- Elect Plan
- CoolCents Program (Air Conditioning Load Management program)
- Low Income Weatherization Program
- Summary Billing
- Preferred Bill Dates
- Bi-lingual interpretation services

Automated Meter Reading - Cell Net

IPL utilizes and manages several additional methods of customer contact or correspondence such as Bill Messaging, Bill Inserts, Envelope slugs, Letters, Apartment Fax Connects, etc.

7. How does your utility evaluate the quality and performance of your customer service activities?

IPL Customer Services evaluates the quality and performance through various means, including: statistical analysis, quality control, monthly performance review of recorded/live calls for quality consistency and identification of educational needs, and a monthly SRBI Customer Satisfaction Survey.

- Statistical analysis - Specific statistical data derived through our Call Center Management Information System: Abandons; IVR utilization; Call volume - forecasting statistical information; Average Speed of Answer; Talk Time; Call Work Time; Average Handle Times; Productivity measurement, etc.
- IPL utilizes four Quality Coordinators. Their responsibilities include, but are not limited to, monthly tracking of CSR overall performance through a variety of means.
  - Each Quality Coordinator has a designated number of CSR's assigned to his/her team.
  - Each CSR is monitored and evaluated on five calls every four weeks. A point-scaled monitoring form is used to quantify the level of technical expertise and soft skills that a CSR displays in each monitored call. Quality Coordinators offer critical and constructive feedback. If clear unacceptable performance is determined during the monitoring process of a call the Quality Coordinator immediately reports this to a Team Leader for additional evaluation and conclusive action.
  - Quality Coordinators track schedule adherence and absence on a daily basis. This information is compiled on a report that becomes part of the CSR's monthly performance discussion. If a Quality Coordinator determines that a CSR is failing to follow his/her schedule on a recurring basis, this issue is immediately reported to a Team Leader for additional evaluation and conclusive action.

- The Quality Coordinators primarily focus on monitoring, coaching, and educational needs. Any identified trends regarding potential training issues are communicated to the Education Coordinator for possible enhanced classroom refresher opportunities.

CSR overall performance is evaluated monthly on five key areas:

- Quality (Monitoring scores)
- Productivity
- Absences
- Schedule Adherence
- Job Related Performance

Team Leaders review Monthly Performance Evaluations and make additional comments and suggestions on areas of exceptional performance, as well as areas for improvement. Quality Coordinators have regular Calibration Sessions where all Coordinators monitor & score the same calls for consistency assurance. Team Leaders also perform occasional audit checks on Quality Coordinator performance.

8. Is the compensation of employees, groups of employees or divisions tied to customer service performance? Please explain how this is done and whom this process affects.

Some specific compensation components are derived as a result of what can be termed "Customer Service Performance". Management establishes annual Company and Individual Group Performance Goals supported by Key Performance Indicators. Groups utilize various components and indicators to measure performance.

IPL's contractual agreement with our Union provides structured and applied steps indicating performance or merit increases. Performance and Merit are determined on an individual basis as defined by these applied steps and monthly Customer Service performance reviews.

IPL Customer Services exempt employees are formally evaluated annually on several criteria. Performance and Merit are determined on an individual basis as related to performance measurements as defined annually by IPL Management.

9. What methods or statistics are used to evaluate customer service performance? Please provide a description of the methods or statistics used.

Current IPL Call Center performance targets include:

- Call Center Average Speed of Answer (excluding storms):
  60 Seconds (measured quarterly)
- Call Center Average Speed of Answer or total calls answered (during storm events):
  Established measurements based on time and volume, either ASA or # of calls answered.

Additional Customer Services' Performance Components include:

- Quality
- Safety
- Targeted Statistical Service Goals, both Performance and Financial
- Customer Satisfaction - IPL contracts with Schulman, Ronca, & Bucuvalas, Inc. (SRBI) for Customer Satisfaction Survey needs. SRBI is a leading full-service market and opinion research firm, serving energy-industry clients since their founding in 1981. SRBI performs monthly, quarterly, and annual surveys for IPL. A summary of survey performance categories:
- Overall performance - broken out into several components
- Performance in restoring electrical service after a storm
- Ability to provide good value for your money
- Ability to maintain continuous flow of power
- Handling of individual customer questions or complaints
- Being a good corporate citizen
- Unaided awareness of IPL sponsored programs
- Aided awareness of IPL sponsored programs
- Accuracy in billing and handling of payments
- The kind of company whose word you can trust
- Keeping customers informed/services and energy matters
- Being an environmentally responsible company
- IPL advertising awareness

Additionally, as referenced in question 1, many derived Customer Service metric performance components are retained, trended, and coordinated through our benchmarking efforts with PA Consulting. We analyze these components enabling comparison with both IPL historical performance, as well as current industry standard performance.

Indianapolis Power & Light Company

Exhibit A

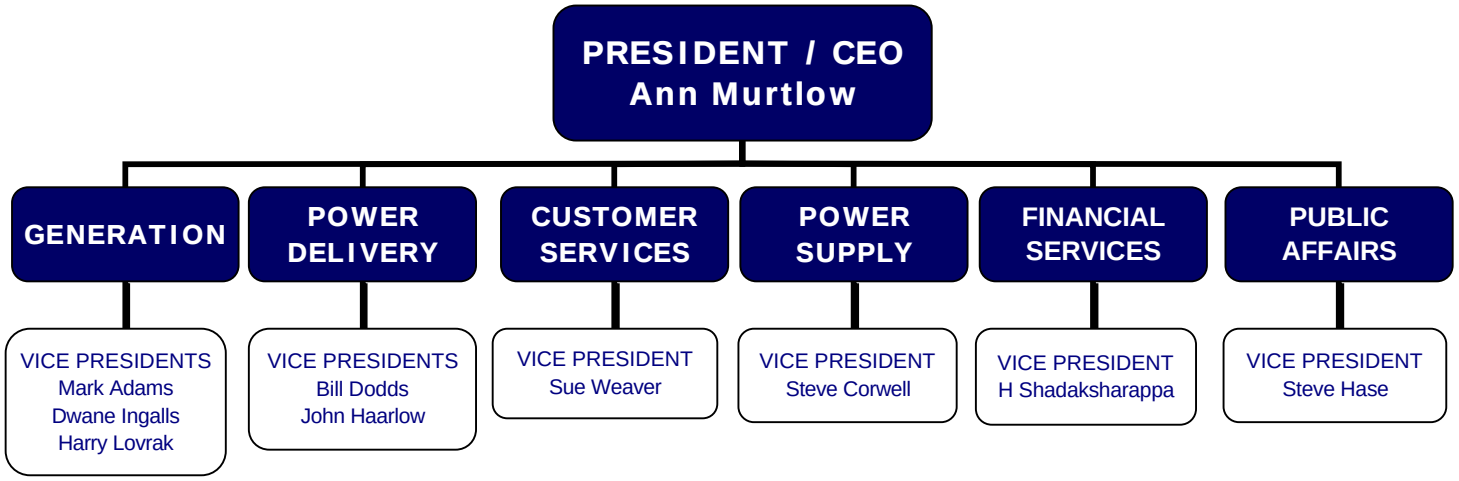

Exhibit B

Customer Services